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ORIGINAL ARTICLE

Ecology of the Sand Boa, *Eryx jayakari* in Riyadh Region of Saudi Arabia

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Abstract The ecology, feeding habits and sexual dimorphism in Arabian Sand Boa, *Eryx jayakari* from the Central region of Saudi Arabia, were studied. In this study the *E. jayakari* was recorded for the first time from several sites. Significant differences were noted in total length of body and tail, and body diameter of male and female. The females were of larger size. The mean number of the dorsal body scales, ventrals and subcaudal for both sexes were not significantly different. The mean number of the dorsal body scales, ventral body scales and subcaudal scales for the females was 43, 169 and 18 scales which were not significantly different from respectively ones in males 42, 168 and 18 scales. Frequent prey consumed were lizards (50%), rodents (25%) and arthropods (12.5%).

1. Introduction

Saudi Arabia lies between Africa and Asia, occupying about three fourth of the Arabian Peninsula. Saudi Arabia is hot (50 °C) in summer and cold (20 °C) in winter. Saudi Arabia lies in the tropical and sub-tropical region, it has – mountains, vast sandy deserts, valleys and forests. Despite hostile environments, a considerable number of species of reptiles occur here.

Few ecological studies have been done on snakes and lizards of different regions of Saudi Arabia *viz*., Southern Hijaz (Parker, 1933, 1938), Eastern Arabia and Northeastern Arabia (Mandaville, 1965, 1967), Central Arabia (Schmidt, 1941; Al-Wailly and Al-Uthman, 1971), and Riyadh (Hussein, 1966). Farag and Banaja (1980) have identified four anuran species, 28 species of lizards and 15 species of snakes, mapping their distribution in the Western region of Saudi Arabia.

Of the 51 species of snakes, nine are sea snakes, 42 are terrestrial, of which 9 are venomous (Mandaville, 1965; Gasperetti, 1974, 1988; Leviton, 1977a,b; Al-Sadoon, 1989). Reptiles have low ability to withstand changes in habitat; their dispersal is particularly dependent on environmental conditions. Few species have been adopted to peculiarities of habitats in the Sahara desert (Abuzinada et al., 2004). Snakes play important role in the ecosystem, they control rodent and insect populations in check (Masood, 2012).

The Arabian Sand Boa, *Eryx jayakari* is a small harmless snake, only boid found in the Arabian Peninsula. It is nocturnal, lives mostly under the desert sand, eyes are positioned on the top of head, rather than on sides (Fig. 1). It allows the snake to see while body remains buried in the sand. *E. jayakari*

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Figure 1 The Sand Boa, *Eryx jayakari*.

is carnivores, it preys mainly on small rodents, reptiles and arthropods (Al-Johany and Al-Sadoon, 1996; Hellyer and Aspinall, 2005).

Unlike most boas, which give birth to live young, the Arabian Sand Boa is one of the three boa species that lay eggs (Bartlett and Bartlett, 2005). Usually a clutch of seven eggs is laid, which take around two months to hatch (Hellyer and Aspinall, 2005).

In body coloration it appears similar to the more familiar East African Sand Boa, *Eryx colubrinus*, with a black or brown pattern on an orange/yellow background. However, the pattern is finer and more irregular than that of *E. colubrinus* and the darker blotches may form irregular bands across the body of the snake. In some parts of its range the Arabian Sand Boas are darker and almost pattern less, a condition similar to that seen on some populations of *Eryx miliaris*, *Eryx conicus* and *E. colubrinus*. The present work is a detailed study of ecology and biology of *E. jayakari* in Riyadh Region.

2. Materials and methods

The field study was carried out in different parts of the sandy regions (Nafud Qunayfidhan, Nafud al Sirr, Nafud Dahna, Nafud Al Mazhur, Saad Park and Al-Thumamah) at Riyadh, Saudi Arabia; in a diameter 200 km in the four directions, for one year on monthly basis, form March 2010 to February 2011. During the survey the snake tracks were followed to reach them in their burrows. The data are mapped using the GPS. Ecological field studies including distribution, behavioral, morphological characters and the mode of nutrition were carried out.

Seventy animals were collected for laboratory studies. The animals were killed by freezing at −2 °C for 24 h. The parameters recorded were: the body weight, snout-vent length, vent-tail length, total length and diameter according to Schoener (1968), number of dorsal scales at mid-body and ventral scales. The digestive tract was removed and preserved in 70% ethanol for investigation on the food contents.

3. Results and discussion

E. jayakari (Fig. 1) was found in several sites in Riyadh *viz*., Thumamah, the eastern and northern Adhirah, Saad and Wasia (East), Nfod Alzoillat (South), Nfod Hammad area (North), near the Al Zulfi area, El Muzahmiyya area (west), and southern Nfod Guenivzh.

Table 1 shows significant difference between both the males and females in terms of total length, snout-vent length and body diameter with the females attaining larger size ($P < 0.05$). The mean number of the dorsal body scales, ventral body scales and subcaudal scales for the females was 43, 169 and 18 scales which were not significantly different from respective ones in males 42, 168 and 18 scales (Table 1).

The result of stomach contents indicates that *E. jayakari* is carnivorous and feeds mainly on: lizards (*Acanthodactylus schmiditi*, *Bunopus tuberculatus* and *Stenodactylus slevinii*) which form 50% of the stomach contents, rodents (*Gerbillus cheesmani* and *Gerbillus nanus*) in snakes with larger size and formed 25% of the stomach contents; and Arthropods (beetles) constituting 12.5% of the content. The remaining 12.5% of the stomach contents was completely digested and could not be identified (Fig. 2).

In this study the *E. jayakari* was recorded for the first time from several sites. Our results reveal that *E. jayakari* is a nocturnal forager, feeds on a variety of animals as concluded by Mattison (1995) and Gasperetti (1988).

The female *E. jayakari* are larger than the males (Fitch, 1960, 1975; Wilbur, 1975; Vogt, 1980), exhibit sexual dimorphism in size and growth rate. Sex differences in body size are widespread in snakes, mostly females are larger than males (Shine, 1994).

Larger animals tend to feed upon larger prey, and hence leading to decreased interspecific and intraspecific competition (Best and Gennaro, 1984).

Table 1 Body measurements and the number of scales of male and females in *E. jayakari*. (M ± SE).

Measurements	Male (n = 45)	Female (n = 25)
Body		
Snout-vent length	318 ± 6.17	372 ± 11.7
Vent-tail length	20.4 ± 0.60	20.2 ± 0.60
Total length	388 ± 6.85	390 ± 12
Diameter	10.5 ± 0.22	13 ± 0.29
Scales		
Dorsal scales	42 ± 0.20	43 ± 0.19
Ventral scales	168 ± 0.19	169 ± 0.22
Sub-caudal scales	18.6 ± 0.14	18 ± 0.19

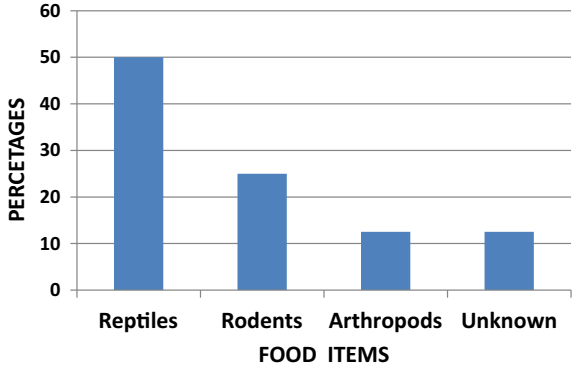

Figure 2 Stomach contents of *E. jayakari*.

Although *E. jayakari* is nocturnal, the existence of diurnally active lizards in the stomach may be due to snakes forage at night for inactive prey. Shine (1982) has also reported nocturnal foraging of inactive skinks as the feeding "strategy" of small Australian elapid snakes of the genera Cacophis, Furina, Glyphodon, Neelaps, Unechis and some species within Denisonia and Simoselaps.

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